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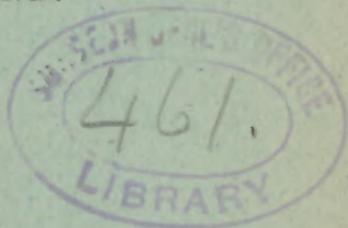
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THE TREATMENT OF
PNEUMONIA IN ST. FRANCIS
HOSPITAL

WITH RESULTS IN TWO HUNDRED AND TWENTY-EIGHT CASES

By
ARNOT SPENCE, M.D.

NEW YORK



Reprinted from the MEDICAL RECORD, July 1, 1893

presented by the author.

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TROW DIRECTORY, PRINTING AND BOOKBINDING CO.

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CASES.

IN view of the great mortality of pneumonia, its treatment is a question of pre-eminent importance. It is still, we must admit, in an unsettled state, and for that reason every effort should be made to advance it. In this article the subject of treatment alone will claim attention.

Professor William Osler, in a very interesting paper on "Mortality in Pneumonia," quotes the rate obtained in the Pennsylvania General Hospital, during 1885, 1886, and 1887, as 36.1 per cent. ; and of all the cases since 1845, it was 29.1 per cent. Also, at the Boston City Hospital he says they report a death-rate of 29.1 per cent., when all the cases for the past thirteen years are considered. In the New Orleans Charity Hospital, in a series of nearly four thousand cases, he quotes them as reporting a rate of mortality of 28.01 per cent.

In a report made by Dr. Latta, of 257 cases of pneumonia treated for the Pennsylvania Railroad Relief Department, he gives the death-rate as 20.23 per cent. In explanation of this rather low rate, he describes his patients as strong and healthy men, of temperate habits, and engaged in healthy out-door work. Thus he shows his appreciation of the fact that he had the best possible material for good results.

Professor A. L. Loomis reports the mortality as obtained by him, in 255 cases treated in his wards at Belle-



vue Hospital during a period of four years, as 34.1 per cent. In physical condition his patients were the opposite of those of the Pennsylvania Railroad Relief Department, for nearly one-half of them were complicated cases. These figures suffice to show the great severity of pneumonia, in this country at least; and they are a sufficient argument in themselves for the presentation of facts in support of a treatment which has given better results.

The cases forming the subject-matter of this report, were treated on the service of Dr. J. H. Ripley, at St. Francis Hospital, during the period from October 1, 1884, to October 1, 1892. As the previous condition and surroundings of the patients are of such importance when comparing the results obtained by different methods of treatment, a few words bearing on these cases cannot fail to be of interest.

They were, with but few exceptions, residents of the East Side tenements, and of most every nationality. The majority, however, were Germans. Owing to the unsanitary state of these dwellings, the hardships of breadwinning, and the dissipations these people indulge in, their physical condition is seldom even fair; and they are thus heavily handicapped in the struggle with any grave disease. In addition, they allow ignorance and superstition to stand in the way of their well-being, and very often delay applying for treatment until treatment can be of little avail. They are firm believers in the self-limitation of disease, and suffer patiently in the hope that the next day will find them better.

The treatment, as pursued in all of the cases, was in accordance with a plan suggested by Dr. Ripley, and through his directions carried out. To begin with, the bowels were freely moved. For that purpose five grains of calomel, well rubbed up with sugar and milk, was given if the patient's condition allowed; or if too weak, a more gentle laxative was employed. After the bowels had

acted, the following mixture was given, a half-ounce every two hours :

R. Tr. aconiti.....	ʒ xxiv.
Tr. opii camphoratae.....	ʒ ij.
Liq. ammonii acetatis.....	ʒ iv.
Syr. zingiberis.....	ʒ ii.
Aquaे.....	q. s. ad ʒ vj.
M. Sig. : ʒ ss. every two hours.	

The aconite was given primarily for its effect on the heart and blood-vessels, and thus on the inflamed lung, and secondarily to reduce the temperature. It produces a quieting and slowing of the irritable and rapid heart, and a reduction of the arterial pressure, thereby lessening the amount of blood in the congested lung. It controls the temperature within a safe range, and prevents the marked exacerbations so common in typical cases of this disease. In strong and full-blooded patients, veratrum viride was substituted for the aconite in this mixture, and used in about the same dose. The paregoric is added to ease the short and harassing cough, which is often such a disturber of rest. The spirit of mindererus acts as a diaphoretic, keeping the skin moist, and in its way relieving the kidneys to some extent. Besides assisting thus to keep the temperature down, it is also a stimulant.

Throughout the administration of this mixture the heart was most carefully watched to note the effects of the drugs, and, all things being favorable, it was continued until the fall in temperature denoted the crisis of the disease. When further stimulation seemed necessary, whiskey was freely given, but never unless it was indicated. The administration of alcoholic stimulants all through this disease, as is frequently done, is a practice capable of doing great harm.

In obstinate sleeplessness from any cause, as well as that caused by troublesome cough or pleuritic pain, a drachm of the U. S. solution of morphine was occasionally given at night. The free or constant use of morphine

was never resorted to, for its injurious effects in most instances far over-balance any relief it might afford the patient. It masks the signs, which to the observant attendant are the danger signals of the disease, and adds, when given too freely, another and greater danger, by its action in diminishing the number of the respirations, thereby interfering with the proper oxygenation of the blood.

If, notwithstanding the use of this, our pneumonia mixture, the temperature should rise and remain above 104° F., the cold half pack was resorted to in most cases. The antipyretic drugs were given only on rare occasions, and then never by order of the visiting physician, who has always strenuously opposed their use; but rather in response to the uncontrollable impulse, that seems to be epidemic not alone among the younger members of the profession, that every rise in temperature, whether extreme or otherwise, must be combated by the administration of one of these dangerous drugs. It is unreasonable to expect that a few hours' remission of fever, the result of any of these depressing antipyretics, can better the condition of the patient, or even compensate for the bad effect the drug leaves on the heart. The indiscriminate employment of these antipyretic drugs in every case of fever or rise of temperature, cannot be too severely condemned.

The only attempt at local measures or applications was the wearing of an oil-silk jacket over the chest, immediately next the skin. This was worn throughout the treatment. While flax-seed poultices, when correctly applied, seem to favorably influence the course of pneumonia in children, they cannot be used with comfort in the adult. For without being of immense bulk and weight, we cannot make them sufficiently large to completely encircle an adult chest; and certainly they are of no value when otherwise applied. The small poultice, equal in size to one's hand, as usually applied by the amateur nurse, is but a useless substitute.

The diet in all of our cases was limited, until convales-

cence set in, to milk, meat broths, soups, and farinaceous gruels. The reclining posture was preferred, and the patient was not allowed to leave the bed for any purpose. Much praise is due to the nurses, the Sisters in charge of the hospital, for their intelligent and untiring attention to these patients. During the period mentioned, from October 1, 1884, to October 1, 1892, Dr. Ripley's wards cared for 276 cases of pneumonia; while 228 of those received this particular treatment. These 228 cases can be classified as follows:

	Cases.	Deaths.	Mortality. Per cent.
Croupous pneumonia, uncomplicated.....	125	18	14.4
Croupous pneumonia, complicated.....	76	25	32.8
Catarrhal pneumonia, uncomplicated.....	25	5	20.0
Catarrhal pneumonia, complicated.....	2	0	0.0
 Total number.....	 228	 48	 21.05

Thus, of the 228 cases treated according to the plan already described, 48 died, showing a mortality-rate of 21.05 per cent.

A glance at the different groups and at the results given, shows very conclusively that the complications which attend this disease, and the affections it is so commonly associated with, have much to do with its great fatality. Notice the low rate, only fourteen per cent., obtained in the uncomplicated cases of croupous pneumonia, or those cases in which only one lung was involved and no other disease coexisted; while in the complicated cases of the same variety the mortality was 32.8 per cent.—two and one-third times as great. That more than one-third of the croupous pneumonia cases were complicated is another important fact. The death-rate of the uncomplicated cases of the catarrhal form was twenty per cent. This was higher than that of the same class of the croupous variety by nearly one-half. Owing to the small number (only two cases) in the complicated group, we cannot make any comparison between the two classes of the catarrhal

form of this disease. Since we have observed in a general way the serious effect these complications have on the main result, it must prove of greater importance to note which of them are most dangerous. In the following table, the cases have been so arranged as to show the number complicated by the different affections, and the number of each that have ended in death:

Variety and Complications.	Cases.	Deaths.
Double croupous pneumonia.....	13	7
with pleurisy	2	1
with empyema (pyothorax)	1	..
with pleurisy and pericarditis	2	1
with pericarditis and nephritis	1	..
with nephritis and valvular disease of heart	1	1
with miscarriage at 6½ months	1	..
Croupous pneumonia with pleurisy	20	..
with empyema (pyothorax)	3	1
with pleurisy and pericarditis	1	1
with hemorrhagic pleurisy, nephritis, and phthisis.....	1	..
with pericarditis and valvular disease of heart	2	..
with pericarditis and phthisis	1	1
with valvular disease of the heart	3	..
with valvular disease of heart and acute rheumatism.....	1	..
with nephritis	4	2
with nephritis and fatty heart	1	1
with phthisis	4	..
with emphysema	2	2
with acute alcoholism	3	3
with chronic alcoholism	1	1
with malarial cachexia	1	..
with acute tonsillitis	1	..
with perihepatitis	1	..
with hepatic abscess and morphine habit	1	..
with purulent infiltration	1	1
with pulmonary abscess	1	1
with cellulitis of the hand	1	1
with melancholia	1	..
Catarrhal pneumonia with pleurisy	1	..
with phthisis	1	..
Total.....	78	25

Double pneumonia, alone and with other complications, was present in twenty-one cases, and of these ten died. Pleurisy, including serous, hemorrhagic, and purulent effusions, occurred in thirty-one cases, four being fatal; two of these were double pneumonias, one having in addition acute pericarditis. In only one case with empyema did death occur. Acute pericarditis was present in seven cases, and caused death in four of them.

Of the co-existing diseases nephritis was present, alone and with other complications, in 8 cases, and 5 of them died. Valvular disease of the heart was present in 7 cases, of which number, one, also complicated by nephritis, died. Phthisis affected 7 of the cases, and only one of these ended fatally. Of our patients, 3 had very serious complications, which fortunately did not cause death. A nineteen-year-old wife miscarried a six and one-half months' fetus during the height of the pneumonia. The second one was complicated by hemorrhagic pleurisy, phthisis, and chronic nephritis; and the third, a male nurse with the morphine habit, had, in addition to his pneumonia, a hepatic abscess. Thus we had, all told, 78 cases with complications, 25 of which proved fatal. This makes the death-rate, in complicated cases alone, thirty-two per cent.

In the following list the causes of death have been enumerated, and the sex of these cases given:

Causes of Death.	Male.	Female.	Total.
Croupous pneumonia, uncomplicated.....	14	4	18
Catarrhal pneumonia, uncomplicated.....	5	..	5
Double croupous pneumonia.....	7	..	7
with pleurisy	I	I
with pleurisy and pericarditis	I	I
with nephritis and valvular disease of heart	I	..	I
Croupous pneumonia with empyema (pyothorax).	I	..	I
with pleurisy and pericarditis	I	..	I
with pericarditis and phthisis	I	..	I
with nephritis	I	I	2
with nephritis and fatty heart.....	..	I	I

Causes of Death.	Male.	Female.	Total.
Croupous pneumonia with emphysema	2	..	2
with acute alcoholism.....	3	..	3
with chronic alcoholism	1	..	1
with purulent infiltration	1	..	1
with pulmonary abscess	1	..	1
with cellulitis of hand	1	..	1
Totals.....	40	8	48

We have classed the cases as uncomplicated so long as the process was confined to one lung, and no other complication existed.

In only 23, or ten per cent. of all the cases, was death due to uncomplicated pneumonia. Again, but 37 of the fatal cases, or 16.2 per cent., had in addition to the pneumonia such complications as commonly spring from it; as extension of the process to the other lung, pleurisy, serous or purulent, and pericarditis. Of the remaining deaths, three per cent. were due to chronic and incurable diseases of the heart, lungs, and kidneys, and 1.7 per cent. to alcoholism. In 1.3 per cent. was death due to septic infection, there being one case each of purulent infiltration of the lung, pulmonary abscess, and cellulitis of the hand.

The mortality caused by uncomplicated deaths, 10.68 per cent., agrees as to the result, with that obtained in 1,000 cases in the Massachusetts General Hospital, which were reported by C. N. Townsend and A. Coolidge, Jr. They concluded that their death rate was but a little over ten per cent., after they had omitted of the fatal cases, those that were necessarily fatal, also the deaths occurring in persons who were delicate, or intemperate, or the subject of some complication. Our rate (10.68 per cent.) represents the results after the omission of only complicated cases. A dissipated subject was not put down as an alcoholic case, unless he showed the immediate effects of alcohol while under observation. Should we eliminate all the delicate or intemperate from among our fatal

cases this rate would be very decidedly diminished. Only one-sixth of the fatal cases were females, but as it will be shown later on, that is about the proportion of the sexes when all the cases are considered.

When we note separately each year's work, the results obtained were as follows :

Year.	Number of cases.	Number of deaths.	Rate of mortality. Per cent.	Number of uncomplicated deaths.	Mortality from uncomplicated deaths, per cent.
Oct. 1, '84, to Oct. 1, '85..	35	8	22.8	4	11.4
Oct. 1, '85, to Oct. 1, '86..	27	2	7.4	1	3.7
Oct. 1, '86, to Oct. 1, '87..	21	2	9.5	2	9.5
Oct. 1, '87, to Oct. 1, '88..	22	9	40.9	3	13.6
Oct. 1, '88, to Oct. 1, '89..	22	4	18.1	1	4.5
Oct. 1, '89, to Oct. 1, '90..	28	6	21.4	4	14.2
Oct. 1, '90, to Oct. 1, '91..	34	6	17.6	4	11.7
Oct. 1, '91, to Oct. 1, '92..	93	11	28.2	4	10.2

The most noticeable feature when comparing the results from year to year is the wide variations shown ; and this very fact proves the uselessness of drawing conclusions from the treatment of a small collection of cases. In 1885-86 the rate of mortality was only 7.4 per cent., and when the results of 1885-86 and 1886-87 are combined, we have the very low death-rate of 8.3 per cent. in 48 cases. On the other hand, in 1887-88 our mortality was very high, it being 40.9 per cent. During that year we were unfortunate in the class of cases, for 6 of the 9 deaths were due to complications. As to the results of the other years, the table speaks for itself.

The mortality in every year was not in an equal degree affected by the omission of the complicated fatal cases ; but in every instance the rate is greatly reduced when these cases are not included. The 40.9 per cent. mortality can in this way be brought down to 13.6 per cent., and even the 8.3 per cent. rate (1885-86 and

1886-87) can be reduced to 4.08 per cent. It is important to note that only one uncomplicated death occurred in each of the two years 1885-86 and 1888-89.

In order to satisfactorily explain the want of agreement in the results obtained during different years, we should have to take into consideration the general physical condition of the patients, their ages, and the variations which are observed in all acute diseases. As an instance of the influence age had on these results, let us look at the ages of the fatal cases occurring in the year when the mortality was so high. Of the 9 deaths none were under thirty years of age: 3 were between thirty and forty years, 2 between forty and fifty, 2 between fifty and sixty; and 1 each at the sixtieth and seventieth year of age. These ages, as will be demonstrated later on, accounted to some extent for that forty per cent. rate.

In order to show that these results vary much less when the cases are arranged in larger groups, we have in the following table divided the cases in larger series:

Number of series	Number of deaths	Rate of mortality, per cent.	Number of uncomplicated deaths	Mortality from uncomplicated deaths, per cent.
First 100 cases.....	79	21.0	10	10.0
Second 100 cases.....	84	16.0	10	10.0
1884-88, 105 cases....	84	20.0	10	9.5
1888-92, 123 cases....	96	21.9	13	10.5
Total, 228 cases.....	180	21.05	23	10.05

Here the lowest mortality was in the second series of 100 cases only sixteen per cent. Taking a glance at the other groups, the rates are quite constant, there being a variation of less than two per cent. between the lowest and the highest. In the mortality of uncomplicated

deaths this difference in the rates is only one per cent. If the first two groups are combined, we have a series of 200 consecutive cases, with a death-rate of only 18.5 per cent. The result obtained after a consideration of all the cases, 21.05 per cent., compares very favorably with the rates of the other hospitals, as quoted at the beginning of this article.

Age.—The patients ranged in age from five to seventy-eight years, there being one case at each of these limits and both recovered. The seventy-eight-year-old patient was a man with a severe pleuro-pneumonia.

Age.	Cases.	Deaths.	Mortality, per cent.
Under 10 years.....	3	0	0.0
From 10 to 20 years.....	18	0	0.0
From 20 to 30 years.....	88	15	17.0
From 30 to 40 years.....	60	11	18.3
From 40 to 50 years.....	32	10	31.2
From 50 to 60 years.....	15	6	40.0
From 60 to 70 years.....	9	4	44.4
At 70 years and over.....	3	2	66.6

The small number of cases under ten years of age is explained, when it is understood that St. Francis Hospital does not, as a rule, admit children for treatment. Under twenty years of age there were no deaths, while 21 cases below that age were treated. Nearly one-half our patients were under thirty years old, and over two-thirds were less than forty years of age. While the mortality of those between twenty and thirty years old was seventeen per cent., when we consider all the cases under thirty years, 109 in number, the rate is only 13.7 per cent. This very low death rate is undoubtedly due to the vigorous and sound constitutions of these young subjects. There were 169 cases under forty years of age, of which 26, or 15.3 per cent., died; and 201 cases under fifty years, with 36 deaths, a mortality of 17.8 per cent. These figures can be compared with the mortality reported by Dr. Latta, of the Pennsylvania Railroad Relief Department, which has

been previously mentioned. In all probability those railroad men were under forty years of age; but in order to allow for some being older, we can place them for comparison in the class of cases under fifty years of age. It will be remembered Dr. Latta's results gave a mortality of 20.23 per cent.

It is interesting to note how steadily the rate runs up with the age, thus proving the great influence that factor has on the main result. To be sure, the small number of cases at the advanced ages, makes the mortality-rates for those periods less valuable; still, for comparison with each other they are sufficiently reliable. This marked influence that age exerts on the mortality can be easily understood. A constitution generally weakened by age cannot hope to battle against an exhausting disease with the same success as a younger one; and again, the patient with advancing years is more likely to be the subject of some chronic disease, which with the advent of pneumonia will help toward a fatal termination. When we inquire into the two deaths that occurred in patients at the seventieth year, we find both died after seven days of treatment; one had a catarrhal pneumonia uncomplicated except by age, and the other a croupous pneumonia complicated by an old emphysema. In like manner, of the four fatal cases between sixty and seventy years of age, two were uncomplicated, except by years. Of the other two, one had double pneumonia, pleurisy, and pericarditis, and the other chronic nephritis and fatty heart in addition to the pneumonia.

While it is generally conceded that this is one of the most fatal of the acute diseases in old age, according to some observers patients over sixty years of age, recover much more frequently than would be supposed. In these patients the grade of fever is not so high, and the process seems to be much less active.

Sex.—The female sex claimed 37 of our cases, and 191 were males. Death terminated the disease in 8 of the

female cases, a mortality of 21.6 per cent. ; and 40 of the males died, or 20.9 per cent. These figures tend to corroborate the general conclusions, that pneumonia is more fatal among females, while the disease seems to show a preference for the male sex.

Season.—Most of these cases occurred during the changeable and wet months of the spring of the year, the number being nearly as large as those of the fall and winter combined.

	Cases.	Deaths.	Mortality. Per cent.
Summer.....	30	8	26.6
Autumn.....	41	8	19.5
Winter.....	59	11	18.6
Spring.....	98	21	21.4

While this disease is usually looked upon as most prevalent and fatal during the spring of the year, in our cases the summer months gave the highest mortality. The heat and humidity, so distressing and exhausting to a person sick and confined to bed, are particularly unbearable when the lungs and heart are disabled. This probably explains the increased mortality during the warm season. While the winter gave the lowest rate, during the spring months we had the largest number of cases, with a mortality of only 21.4 per cent.

Thus it is evident that age, sex, and season, all exercise an influence to a greater or less degree on the result, and these we certainly cannot counteract. The complications which caused death in over eleven per cent. of our cases we cannot expect to prevent by any method of treatment, although it must be acknowledged we can modify their course. There is sufficient room for reduction, when we reflect that ten per cent. of our mortality was in uncomplicated cases. While we were able to show a death-rate of only 7.4 per cent. in 27 cases, and 8.3 per cent. in a series of 48, it is hardly to be expected that such results could be realized in a collection of 200 consecutive cases, especially in hospital practice. At the present time, how-

ever, the rate of mortality, 21.05 per cent., which has been obtained in these cases, must be considered good.

The claim that can be made for this plan of treatment is that it is rational, and meets the indications as well as they can be met with our present knowledge, and the means at our command. It certainly does not retard nature, but aims to save the strength and aid the resisting power of the patient, until the disease has run its course. That it is of some assistance, is shown by the results we have obtained; a mortality-rate which certainly compares very favorably with that of other hospital reports.

In conclusion, the writer wishes to express his appreciation of the kindness of Dr. J. H. Ripley, in permitting him to report these cases, and his gratitude for valuable suggestions and advice.

70 WEST SEVENTY-FIRST STREET.

